

10/501223

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1

SEQUENCE LISTING

<110> BIOMERIEUX SA

<120> HIV-1 VIRUS TAT PROTEIN MUTANTS

<130> IFB 01 CE BIO MTAT

<140> PCT/FR03/00051

<141> 2003-01-09

<150> FR 02/00319

<151> 2002-01-11

<160> 108

<170> PatentIn version 3.1

<210> 1

<211> 101

<212> PRT

<213> HIV-1 virus

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			20					25					30		

His	Cys	Gln	Val	Cys	Phe	Thr	Lys	Lys	Gly	Leu	Gly	Ile	Ser	Tyr	Gly
	35						40					45			

Arg	Lys	Lys	Arg	Arg	Gln	Arg	Arg	Arg	Ser	Pro	Gln	Asp	Ser	Glu	Thr
	50				55						60				

His	Gln	Val	Ser	Leu	Ser	Lys	Gln	Pro	Ala	Ser	Gln	Pro	Arg	Gly	Asp
65				70						75				80	

Pro	Thr	Gly	Pro	Lys	Glu	Ser	Lys	Lys	Lys	Val	Glu	Arg	Glu	Thr	Glu
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Thr	Asp	Pro	Val	Asp
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<213> artificial sequence

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<223> K51T-R52L mutant of Tat protein

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Gln	Pro	Lys	Thr	Ala	Cys	Asn	Asn	Cys	Tyr	Cys	Lys	Lys	Cys	Cys	Phe
			20					25					30		

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Thr Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
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<220>
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 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Thr Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
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 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Thr Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
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 <213> artificial sequence

<220>
 <223> K51T-G79A mutant of Tat protein

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 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Thr Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
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 1 5 10 15

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 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Thr Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
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 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Thr Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
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 1 5 10 15

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 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
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 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
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 <212> PRT
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<220>
 <223> R52L-G79A mutant of Tat protein

<400> 10

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Lys Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
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<210> 11

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<212> PRT

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<223> R52L-K89L mutant of Tat protein

<400> 11

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Lys Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
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<210> 12

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<223> R52L-E92Q mutant of Tat protein

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 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Lys Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
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Thr Asp Pro Val Asp
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<210> 13

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<223> R55L-R57L mutant of Tat protein

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Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Lys Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
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Thr Asp Pro Val Asp
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<223> R55L-G79A mutant of Tat protein

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Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Lys Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
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Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Lys Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
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 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Lys Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
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<210> 17

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<212> PRT

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<223> R57L-G79A mutant of Tat protein

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Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Lys Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
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<220>
 <223> R57L-K89L mutant of Tat protein

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 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
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<220>
 <223> R57L-E92Q mutant of Tat protein

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 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
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<210> 20
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<220>

<223> G79A-K89L mutant of Tat protein

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
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Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
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<210> 21
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<223> G79A-E92Q mutant of Tat protein

<400> 21

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1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
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 <213> artificial sequence

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 <223> K89L-E92Q mutant of Tat protein

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 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
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 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-K51T-R52L mutant of Tat protein

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 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Thr Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
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 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Thr Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
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<210> 25
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 <212> PRT
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<220>
 <223> C27S-K51T-R57L mutant of Tat protein

<400> 25
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 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Thr Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
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<210> 26
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<220>

<223> C27S-K51T-G79A mutant of Tat protein

<400> 26

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1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Thr Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
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<223> C27S-K51T-K89L mutant of Tat protein

<400> 27

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Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Thr Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
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<220>
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 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Thr Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
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<220>
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 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
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 <212> PRT
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<220>
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 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
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 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
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 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
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 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
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 Thr Asp Pro Val Asp
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Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
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<223> C27S-R55L-G79A mutant of Tat protein

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Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

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<210> 36
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-R55L-K89L mutant of Tat protein

<400> 36
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 37
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-R55L-E92Q mutant of Tat protein

<400> 37
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 38
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-R57L-G79A mutant of Tat protein

<400> 38

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

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<210> 39
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-R57L-K89L mutant of Tat protein

<400> 39

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

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<210> 40
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-R57L-E92Q mutant of Tat protein

<400> 40
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 41
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-G79A-K89L mutant of Tat protein

<400> 41
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 42
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-G79A-E92Q mutant of Tat protein

<400> 42

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

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<210> 43
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K89L-E92Q mutant of Tat protein

<400> 43

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

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<210> 44
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-K51T-R52L-G79A mutant of Tat protein

<400> 44
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Thr Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 45
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-K51T-R52L-K89L mutant of Tat protein

<400> 45
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Thr Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 46
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-K51T-R52L-E92Q mutant of Tat protein

<400> 46
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Thr Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 47
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-K51T-R55L-G79A mutant of Tat protein

<400> 47
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Thr Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 48
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R55L-K89L mutant of Tat protein

<400> 48

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Thr Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
 100

<210> 49
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R55L-E92Q mutant of Tat protein

<400> 49

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Thr Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
 100

<210> 50
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R57L-G79A mutant of Tat protein

<400> 50

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Thr Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
 100

<210> 51
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R57L-K89L mutant of Tat protein

<400> 51

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Thr Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
 100

<210> 52
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-K51T-R57L-E92Q mutant of Tat protein

<400> 52
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Thr Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 53
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-K51T-G79A-K89L mutant of Tat protein

<400> 53
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Thr Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 54
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-G79A-E92Q mutant of Tat protein

<400> 54

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Thr Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
 100

<210> 55
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-K89L-E92Q mutant of Tat protein

<400> 55

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Thr Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
 100

<210> 56
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-R52L-G79A-K89L mutant of Tat protein

<400> 56
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 57
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-R52L-G79A-E92Q mutant of Tat protein

<400> 57
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 58
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-R52L-K89L-E92Q mutant of Tat protein

<400> 58

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Lys Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
 100

<210> 59
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-R52L-R55L-G79A mutant of Tat protein

<400> 59

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Lys Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
 100

<210> 60
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-R52L-R55L-K89L mutant of Tat protein

<400> 60
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 61
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-R52L-R55L-E92Q mutant of Tat protein

<400> 61
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 62
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-R52L-R57L-G79A mutant of Tat protein

<400> 62
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 63
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-R52L-R57L-K89L mutant of Tat protein

<400> 63
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 64
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-R52L-R57L-E92Q mutant of Tat protein

<400> 64

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1           5           10           15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20           25           30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35           40           45

Arg Lys Lys Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50           55           60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
65           70           75           80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
          85           90           95

Thr Asp Pro Val Asp
          100

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<210> 65
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-R55L-G79A-K89L mutant of Tat protein

<400> 65

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1           5           10           15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20           25           30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35           40           45

Arg Lys Lys Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50           55           60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65           70           75           80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
          85           90           95

Thr Asp Pro Val Asp
          100

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<210> 66
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-R55L-G79A-E92Q mutant of Tat protein

<400> 66

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Lys Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
 100

<210> 67
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-R55L-K89L-E92Q mutant of Tat protein

<400> 67

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Lys Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
 100

<210> 68
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-R55L-R57L-G79A mutant of Tat protein

<400> 68
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 69
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-R55L-R57L-K89L mutant of Tat protein

<400> 69
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 70
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-R55L-R57L-E92Q mutant of Tat protein

<400> 70
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 71
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-R57L-G79A-K89L mutant of Tat protein

<400> 71
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 72
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-R57L-G79A-E92Q mutant of Tat protein

<400> 72

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 73
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-R57L-K89L-E92Q mutant of Tat protein

<400> 73

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 74
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-G79A-K89L-E92Q mutant of Tat protein

<400> 74
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 75
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>
 <223> C27S-K51T-G79A-K89L-E92Q mutant of Tat protein

<400> 75
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Thr Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 76
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R52L-R55L-G79A mutant of Tat protein

<400> 76

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Thr Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
 100

<210> 77
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R52L-R55L-K89L mutant of Tat protein

<400> 77

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Thr Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
 100

<210> 78
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R52L-R55L-E92Q mutant of Tat protein

<400> 78

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Thr Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 79
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R52L-R57L-G79A mutant of Tat protein

<400> 79

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Thr Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 80
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R52L-R57L-K89L mutant of Tat protein

<400> 80

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Thr Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
 100

<210> 81
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R52L-R57L-E92Q mutant of Tat protein

<400> 81

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Thr Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
 100

<210> 82
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R52L-G79A-K89L mutant of Tat protein

<400> 82

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1           5           10           15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20           25           30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35           40           45

Arg Lys Thr Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50           55           60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65           70           75           80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
          85           90           95

Thr Asp Pro Val Asp
          100

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<210> 83
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R52L-G79A-E92Q mutant of Tat protein

<400> 83

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1           5           10           15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20           25           30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35           40           45

Arg Lys Thr Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50           55           60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65           70           75           80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
          85           90           95

Thr Asp Pro Val Asp
          100

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<210> 84
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R52L-K89L-E92Q mutant of Tat protein

<400> 84

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Thr Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
 100

<210> 85
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R55L-R57L-G79A mutant of Tat protein

<400> 85

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Thr Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
 100

<210> 86
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R55L-R57L-K89L mutant of Tat protein

<400> 86

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Thr Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

```

<210> 87
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R55L-R57L-E92Q mutant of Tat protein

<400> 87

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Thr Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

```

<210> 88
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R55L-G79A-K89L mutant of Tat protein

<400> 88

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Thr Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100
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<210> 89
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R55L-G79A-E92Q mutant of Tat protein

<400> 89

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Thr Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100
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<210> 90
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R55L-K89L-E92Q mutant of Tat protein

<400> 90

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Thr Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
          65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

```

<210> 91
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R57L-G79A-K89L mutant of Tat protein

<400> 91

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Thr Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
          65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

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<210> 92
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R57L-G79A-E92Q mutant of Tat protein

<400> 92

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1           5           10           15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20           25           30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35           40           45

Arg Lys Thr Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50           55           60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65           70           75           80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
          85           90           95

Thr Asp Pro Val Asp
          100

```

<210> 93
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-K51T-R57L-K89L-E92Q mutant of Tat protein

<400> 93

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1           5           10           15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20           25           30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35           40           45

Arg Lys Thr Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50           55           60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
65           70           75           80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu
          85           90           95

Thr Asp Pro Val Asp
          100

```

<210> 94
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-R52L-R55L-R57L-G79A mutant of Tat protein

<400> 94

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1           5           10           15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
                20           25           30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
        35           40           45

Arg Lys Lys Leu Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr
        50           55           60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65           70           75           80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
                85           90           95

Thr Asp Pro Val Asp
                100
  
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<210> 95
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-R52L-R55L-R57L-K89L mutant of Tat protein

<400> 95

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1           5           10           15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
                20           25           30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
        35           40           45

Arg Lys Lys Leu Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr
        50           55           60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
65           70           75           80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
                85           90           95

Thr Asp Pro Val Asp
                100
  
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<210> 96
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-R52L-R55L-R57L-E92Q mutant of Tat protein

<400> 96

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Leu Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 97
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-R52L-R55L-G79A-K89L mutant of Tat protein

<400> 97

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

<210> 98
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-R52L-R55L-G79A-E92Q mutant of Tat protein

<400> 98

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Lys Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
 100

<210> 99
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-R52L-R55L-K89L-E92Q mutant of Tat protein

<400> 99

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Lys Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
 100

<210> 100
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-R52L-R57L-G79A-K89L mutant of Tat protein

<400> 100

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

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<210> 101
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-R52L-R57L-G79A-E92Q mutant of Tat protein

<400> 101

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

```

<210> 102
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-R52L-R57L-K89L-E92Q mutant of Tat protein

<400> 102

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Lys Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
 100

<210> 103
 <211> 101
 <212> PRT
 <213> artificial sequence

<220>

<223> C27S-R52L-G79A-K89L-E92Q mutant of Tat protein

<400> 103

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45

Arg Lys Lys Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu
 85 90 95

Thr Asp Pro Val Asp
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<223> C27S-R55L-R57L-G79A-K89L mutant of Tat protein

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Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
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Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
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Thr Asp Pro Val Asp
          100

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Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
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Thr Asp Pro Val Asp
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 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
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 20 25 30
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
 50 55 60
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
 65 70 75 80
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu
 85 90 95
 Thr Asp Pro Val Asp
 100

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Met	Glu	Pro	Val	Asp	Pro	Lys	Leu	Glu	Pro	Trp	Lys	His	Pro	Gly	Ser
1				5					10					15	

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
35 40 45

His	Gln	Val	Ser	Leu	Ser	Lys	Gln	Pro	Ala	Ser	Gln	Pro	Arg	Ala	Asp
65	.				70					75					80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu
85 90 95

Thr Asp Pro Val Asp
100